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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/348,502	07/07/1999	IOANA DONESCU	1807.0924	5329

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EXAMINER

BHATNAGAR, ANAND P

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 07/27/2004

18

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/348,502

Applicant(s)

DONESCU, IOANA

Examiner

Anand Bhatnagar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7 and 9-86 is/are pending in the application.
- 4a) Of the above claim(s) 39-80 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-24, 26, 28, 30, 32, 34, 36, 38, 83, and 84 is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-13,25,27,29,31,33,35,37,81,82,85 and 86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07/07/99 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

1. Applicant's amendment filed on 05/04/04 has been entered and made of record.
2. Applicant has amended claims 1 and 7. Applicant has added two new claims (#85 and #86). Claims 39-80 were previously withdrawn from consideration and the status is unchanged. Currently, claims 1, 3-7, and 9-86 are pending.
3. Regarding claims 1 and 7, applicant argues, in paper #17 on page 28, that the reference of Manjunath et al. (U.S. patent 6,332,030) does not disclose or suggest "using a number of levels dependent on image size" nor discloses the feature of modulation of only the components of the subset consisting of only the components in the lowest frequency sub-band, i. e. only components in the lowest frequency sub-band are used for embedding." Examiner disagrees. As for the first argument this is not in the claim language. What the claim language states is a "multi-resolution spectral breakdown (E1) of the digital data at a level (d) dependent on image size." It states that a single level is determined not "a number of levels." As for the feature "of modulation of only the components of the subset consisting of only the components in the lowest frequency subband" it is not taught by Manjunath et al. but is taught by the secondary reference of Bender et al. (U.S. patent 6,201,879 B1) as discussed by the examiner in his previous

office action, paper # 16. Examiner refers to the rejection below which is the same as the previous office action.

Claim Rejections - 35 USC § 103

4. A.) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 6, 7, 9, 12, 13, 25, 81, 82, 85, and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1).

Regarding claims 1 and 7: Method of inserting a supplementary information item, such as a secret watermark, in digital data (col. 1 lines 36-40), characterized in that it includes the following steps:

- multi-resolution spectral breakdown of the digital data (fig. 1, fig. 6, col. 6 lines 28-34 and 51-56, where the image is broken down into frequency bands) of the digital data at a level dependent on the image size and determined so that a lowest frequency sub-band has a number (n) of lowest frequency comprised between 8x8 and 32x32 (col. 3 lines 18-22, col. 7 lines 26-30, and col. 16 lines 45-52);
- extraction of the components of the lowest frequency sub-band (col. 6 lines 25-34 and 51-56);

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- modulation of the components of said subset in order to insert the supplementary information (col. 7 lines 1-18 and 29-31, where the coefficients are scaled by α) ; and

- reverse multi-resolution spectral re-composition of the watermarked digital data (col. 7 lines 22-25, where the signal is combined to give a watermarked image).

As for the following limitation of: choice of a subset of the components consisting of only components in the lowest frequency subband.

Manjunath et al. discloses to embed corresponding part of a watermark signal into its corresponding part of the image signal based on frequency. Manjunath et al. does not teach to specifically choose only components in the lowest frequency for embedding data. Bender et al. teaches to place a logo signature into only the low frequency part of an image signal (Bender et al.; col. 6 lines 26-29, to embed data into only the low frequency region means that the signal has to be broken down into its frequency components and the low frequency components chosen for data embedding). It would have been obvious to one skilled in the art to combine the teaching of Bender et al. to that of Manjunath et al. because they are analogous in embedding data into the frequency regions of an image signal. One in the art would have been motivated to incorporate the teaching of Bender et al. to that of Manjunath et al. to have a system which will embed hidden data into only the low frequency part of an

image signal, which will undergo lossy compression, to make it robust to compression (Bender et al.; col. 6 lines 29-33).

Regarding claims 3 and 9: Manjunath et al. further discloses an insertion method characterized in that, at the spectral breakdown step, the spectral breakdown is performed by a discrete wavelet transformation and, at the extraction step, the components of the approximation sub-band are chosen (fig. 6, col. 6 lines 35-44, col. 18 lines 48-60, and col. 20 lines 59-67, where only a limited number of coefficients are chosen in the frequency band or number of coefficients are limited by zeroing some of the coefficients in the bands).

Regarding claims 6 and 12: Manjunath et al. further discloses an insertion method characterized in that, at the choosing step, the subset of components is chosen according to a pseudo-random function initialized by a digital signal representing a confidential key associated with the supplementary information to be inserted (col. 21 lines 30-50, where an encryption key is used to pseudo randomly change the coefficients to embed).

Regarding claim 13: Insertion device characterized in that the means of spectral breakdown, extraction, choosing, modulation and spectral recombination are incorporated in:

- a microprocessor ;
- a read-only memory containing a program for inserting a supplementary information item; and

-a random access memory containing registers adapted to record variables modified during the running of the program.

(col. 3 lines 14-30 and col. 8 lines 1-15; It is inherent that the system of Manjunath et al. is composed of a computer which contains a CPU, RAM, and ROM memories, this system receives an image from a host "computer" and computations are performed on the image to break it down embed data and reform they image with data embedded).

Regarding claim 25: Manjunath et al. discloses a digital signal processing apparatus, characterized in that it has an insertion device (col. 6 lines 25-35 and 45-50).

Regarding claims 81 and 82: Insertion device further comprising a step of transformation using a Discrete Cosine Transformation of the components of the lowest frequency (fig. 15 and col. 15 lines 1-5, where a DCT is used to breakdown the signal into a 8x8).

B.) Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of view of Cooklev (U.S. patent 6,359,998).

Regarding claims 4 and 10: Insertion method characterized in that, at the spectral breakdown step, the digital data are broken down iteratively into an approximation version corresponding to a lowpass filtering and a sub-sampling of

the digital data or of a previous approximation version, and into a detail version corresponding to the subtraction of the approximation version from the digital data or from said previous approximation version, and, at the extraction step, the components of the approximation version are chosen.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to perform a lowpass filtering and subsampling of the image data. Cooklev teaches to perform a low pass filtering and subsampling on an image (Cooklev; col. 11 lines 14-20) for data to be embedded. It would have been obvious to one skilled in the art for one to combine the teaching of Cooklev to that of Manjunath et al. because they are analogous in embedding data into an image. One in the art would have been motivated to incorporate the low passfiltering and subsampling of Cooklev into the watermarking device of Manjunath et al. giving a watermarking system which will make it less prone to being attacked by limiting the frequencies that are used from the whole spectrum of frequencies from the image, which makes it difficult to find where the hidden data is embedded (col. 6 lines 4-8).

Regarding claims 85 and 86: They are rejected for the same reason as claims 1 and 7 above and for the following limitation of: reinsertion of said modulated components into the lowest frequency sub-band. It is obvious to one skilled in the art once an image is broken down (by its features, texture,

frequencies, etc.) to embed/insert a watermark or data into it the image components need to be put back together at the end of inserting the information into the image.

C.) Claims 25, 27, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Zeng (U.S. patent 6,373,974).

Regarding claims 27, 29, and 31: Digital photographic apparatus, digital camera, and/or database management system characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device of a database or digital camera "digital photographic apparatus" system. Zeng teaches to have a watermarking system in a digital camera "digital photographic apparatus" as well as a database management (Zeng; col. 11 lines 15-21). It would have been obvious to one skilled in the art to combine the teaching of Zeng to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into a digital camera and database management system as

thought by Zeng in order to place an authentication mark on the work/product produced for identification.

D.) Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Barton (U.S. patent 6,163,842).

Regarding claim 33: Computer, characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device on a computer system. Barton teaches to have a watermarking system in a computer (Barton; col. 9 lines 40-50). It would have been obvious to one skilled in the art to combine the teaching of Barton to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into a computer system as thought by Barton in order to place an authentication mark on the work/product produced for identification.

E.) Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Uchida (U.S. patent 6,370,258).

Regarding claim 35: Scanner, characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device in a scanner system. Uchida teaches to have a watermarking system in a scanner system (Uchida; col.4 lines 55-65). It would have been obvious to one skilled in the art to combine the teaching of Uchida to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into a scanner system as thought by Uchida in order to place an authentication mark on the work/product produced for identification.

F.) Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Chen et al. (U.S. patent 6,314,192).

Regarding claim 37: Medical imaging apparatus, and notably an X-ray radiography apparatus, characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device in a medical apparatus system. Chen et al. teaches to have a watermarking system in a medical apparatus (Chen et al.; col. 8 lines 43-50). It would have been obvious to one skilled in the art to combine the teaching of Chen et al. to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into the medical apparatus system as thought by Chen et al. in order to place an authentication mark on the work/product produced for identification.

Allowable Subject Matter

5. Claims 14-24, 26, 28, 30, 32, 34, 36, 38, 83, and 84 are allowed.

Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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CONTACT INFORMATION

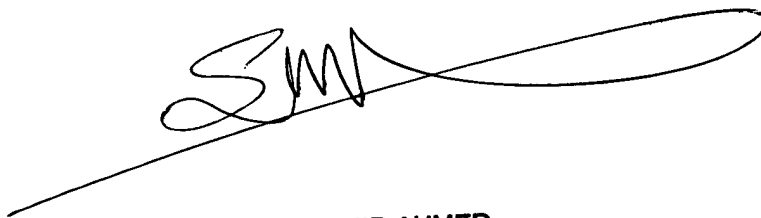
6. Any inquiry into this communication should be directed to Anand Bhatnagar whose telephone number is 703-306-5914, whose supervisor is Amelia Au whose number is 703-308-6604, group receptionist is 703-305-4700, and group fax is 703-872-9314.

AB

Anand Bhatnagar

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July 21, 2004

A handwritten signature in black ink, appearing to read 'SAMIR', with a long horizontal line extending to the right.

**SAMIR AHMED
PRIMARY EXAMINER**